Ice Sun-Catchers

Make a decoration to hang outside, and learn about the states of matter!

Kit contains:

- 1 Small pie-tin
- 1 Ribbon
- Pieces of nature

You will need: more small, beautiful pieces of nature and water.

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INSTRUCTIONS

Step 1. Gather small, beautiful pieces of nature –leaves, flowers, twigs, pine cones, even grass. There are a few bits included in your kit, but adding more will make your sun-catcher look even better. *(This step is optional but recommended.)*

Step 2. Arrange all of your pieces of nature in your pie tin.

Step 3. Fill the pie tin about 2/3 of the way full with water.

Step 4. Make a loop with the ribbon and place the ends in the water so the loop is hanging out of the pie tin.

Step 5. Freeze your water. If the weather is freezing (below 32°F), you can just leave it outside. If it's not, and you don't want to wait, you can do it in your freezer.

Step 6. Once your sun-catcher freezes completely, take it out of the pie tin and hang it on a tree to be a beautiful decoration. If it's below 32°F outside, it will last until it's above freezing temperatures.

Step 6. When it melts, you can reuse the ribbon and the pie tin to make another sun-catcher!

WHAT'S GOING ON?

When you freeze water, you see examples of two different **states of matter**. There are three most basic states of matter: solid, liquid, and gas. Water is a type of matter that lets us easily see all three:

- The **liquid** state is when it's water: it's fluid, it changes shape, but it doesn't change volume/mass.
- The **gas** state is when water is heated up past its boiling point; 212°F or 100°C. The gas state of water is steam: it changes shape, and it changes volume/mass.
- The **solid** state is when water is cooled below its freezing point; 32°F or 0°C. The solid state of water is ice: it doesn't change shape, and it doesn't change volume/mass.

When you made your sun-catcher, you started out with liquid water, put it in a temperature below freezing (32°F) and the liquid water changed to solid water (ice). When the sun heats the solid water (ice) up above 32°F, it will melt and turn back into liquid water.

LEARN MORE ABOUT IT!

Books (Available at MGPL):

- *What is the World Made Of?: All About Solids, Liquids, and Gases* by Kathleen Weidner Zoehfeld
- *States of Matter* by Suzanne Slade
- *Investigating Solids, Liquids, and Gases with Toys: States of Matter and Changes of State*
- *Matter and How it Changes* by Joseph Middleton and Samuel Hiti
- *Changing From Solids to Liquids to Gases* by Brian Knapp
- *Matter* by Carolyn Bernhardt